NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NASA CONTRACT NO. NASW-4598
TASK ORDER NO. 27

ENVIRONMENTAL ASSESSMENT FOR MODIFICATIONS TO 16-FOOT TRANSONIC TUNNEL BUILDING 1146

LANGLEY RESEARCH CENTER
HAMPTON, VIRGINIA

NASA CONTRACT NO. NASW-4598
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MODIFICATIONS TO 16-FOOT TRANSONIC TUNNEL BUILDING 1146 LANGLEY RESEARCH CENTER HAMPTON, VIRGINIA

MARCH 1993

Prepared By:

Ebasco Services Incorporated

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ACRONYMS AND ABBREVIATIONS

AEDC	Arnold Engineering Development Center
AFB	Air Force Base
AFT	Advanced Fighter Technology
CFR	Code of Federal Regulations
DoD	Department of Defense
EA	Environmental Assessment
FONSI	Finding of No Significant Impact
HRSD	Hampton Roads Sanitation District
LaRC	Langley Research Center
LHB	Langley Handbook
NACA	National Advisory Committee for Aeronautics
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NHB	NASA Handbook
NTF	National Transonic Facility
STOL	Short Take-off and Landing
USAF	U.S. Air Force
16-Ft TT	16-Foot Transonic Tunnel

1.0 SUMMARY AND CONCLUSIONS

The proposed action is designed to support the National Aeronautics and Space Administration's (NASA) continuing studies of flight dynamics at transonic speeds. The 16-Foot Transonic Tunnel (16-Ft TT) at the NASA Langley Research Center (LaRC) is NASA's only large transonic wind tunnel facility dedicated to airframe propulsion interaction effects. The proposed construction of new work space and supporting facilities, a new air reduction system, and repairs to the air exchange tower are necessary to maintain this research capability.

The proposed action and the No-Action alternative are the only alternatives considered in this Environmental Assessment (EA). Construction of new work space and parking space at an alternative location was evaluated and determined not to be a viable alternative because of the high cost and operational limitations. The No-Action alternative will not fulfill NASA's objectives for maintaining present and future requirements for transonic testing.

Based on the evaluations presented in this EA, the environmental impacts associated with the proposed modifications to the 16-Ft TT would not individually or cumulatively have a significant effect on the quality of the environment. A Finding of No Significant Impact (FONSI) is recommended.

2.0 PURPOSE AND NEED

2.1 FACILITY BACKGROUND

The Langley 16-Foot Transonic Tunnel (16-Ft TT) is the only large transonic facility within the National Aeronautics and Space Administration (NASA) dedicated to the study of airframe propulsion interaction effects (NASA, 1990). This is a major NASA facility for the development of efficient and economical aircraft to meet NASA's flight requirements and which also benefits the entire aircraft community, including the U.S. Department of Defense (DOD), airframe companies, engine companies, and universities. The research conducted in this tunnel facility has made a contribution to nearly every aircraft in the DOD inventory as well as to those presently in the development stage. Significant accomplishments include drag reduction on the F-15 and F-14, the development of the two-dimensional nozzles for short take-off and landing (STOL) application, the development of the turboprop aircraft concept, the development of the nozzle for the U.S. Air Force (USAF) advanced fighter technology (AFT), the development of the multiplane vectoring nozzle concept, and the correction of the F-15 and B-1 nozzle aeroacoustic problem. Future research activities at this facility will continue to support these programs as well as provide a focus for the propulsion integration effort on High-Speed Civil Transport.

The 16-Ft TT came into operation in 1940 as a high-speed tunnel. Major upgrades to the wind tunnel completed in 1950 and 1961 provided for increased air speed capability, enabling the facility to perform supersonic and transonic studies. Major facility rehabilitations completed in 1977 and 1990 included replacement and modification of fan blades, installation and modification of computer controls, construction of a new model support system, construction of a new model preparation area, and repainting of the tunnel interior.

2.2 PROJECT OBJECTIVES

The primary objectives of the proposed tunnel modification project are to (1) provide the needed expansion of work space and supporting facilities; (2) provide the needed expansion of the facility's air reduction system, and; (3) repair the deteriorated components of the facility's air exchange system.

During the past five years, classified tests in the 16-Ft TT have increased significantly. Approximately 25 percent of the tests in this facility are now at a secret or higher level of classification. This work has put a large strain on current working space, computing areas, and model storage areas. Additionally, there is a shortage of parking space at the facility. The proposed action would provide additional office space, data computation area, model assembly area, storage area, and additional

parking facilities, and would modernize and upgrade existing institutional capabilities for propulsion integration data analysis.

The 16-Ft TT uses high-pressure air to simulate jet exhaust during jet propulsion studies. The Langley Research Center (LaRC) compressor facility (Building 1247E) provides air at 5,000 psi, which is reduced to 1,800 psi by an air reduction system at the 16-Ft TT. This air reduction system provides high-pressure air to both the 16-Ft TT and the adjacent National Transonic Facility (NTF) in Building 1236 and any interruption of the air reduction system affects the operation of both facilities. There is no alternative system to provide a back-up air supply to either tunnel facility. The proposed action will provide a second independent air reduction system at the 16-Ft TT. Having two independent air reduction systems will also provide redundancy, enabling both the 16-Ft TT and the NTF to be operational when one of the air reduction systems is out of service.

The wind tunnel air stream is cooled by an air exchange system. The air exchange tower at the 16-Ft TT has been in operation for over 50 years without rehabilitation, and some of the components have deteriorated. The proposed action calls for removing and replacing the deteriorated components, such as portions of the roof and inner walls.

2.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) addresses environmental issues related to construction of the proposed modifications and operation of the 16-Ft TT after the modifications have been constructed. This EA was prepared in accordance with the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of National Environmental Policy Act (NEPA) (40 CFR Parts 1500 - 1508) and NASA's procedures for implementing the provisions of NEPA (NHB 8800.11).

3.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

3.1 FACILITY DESCRIPTION

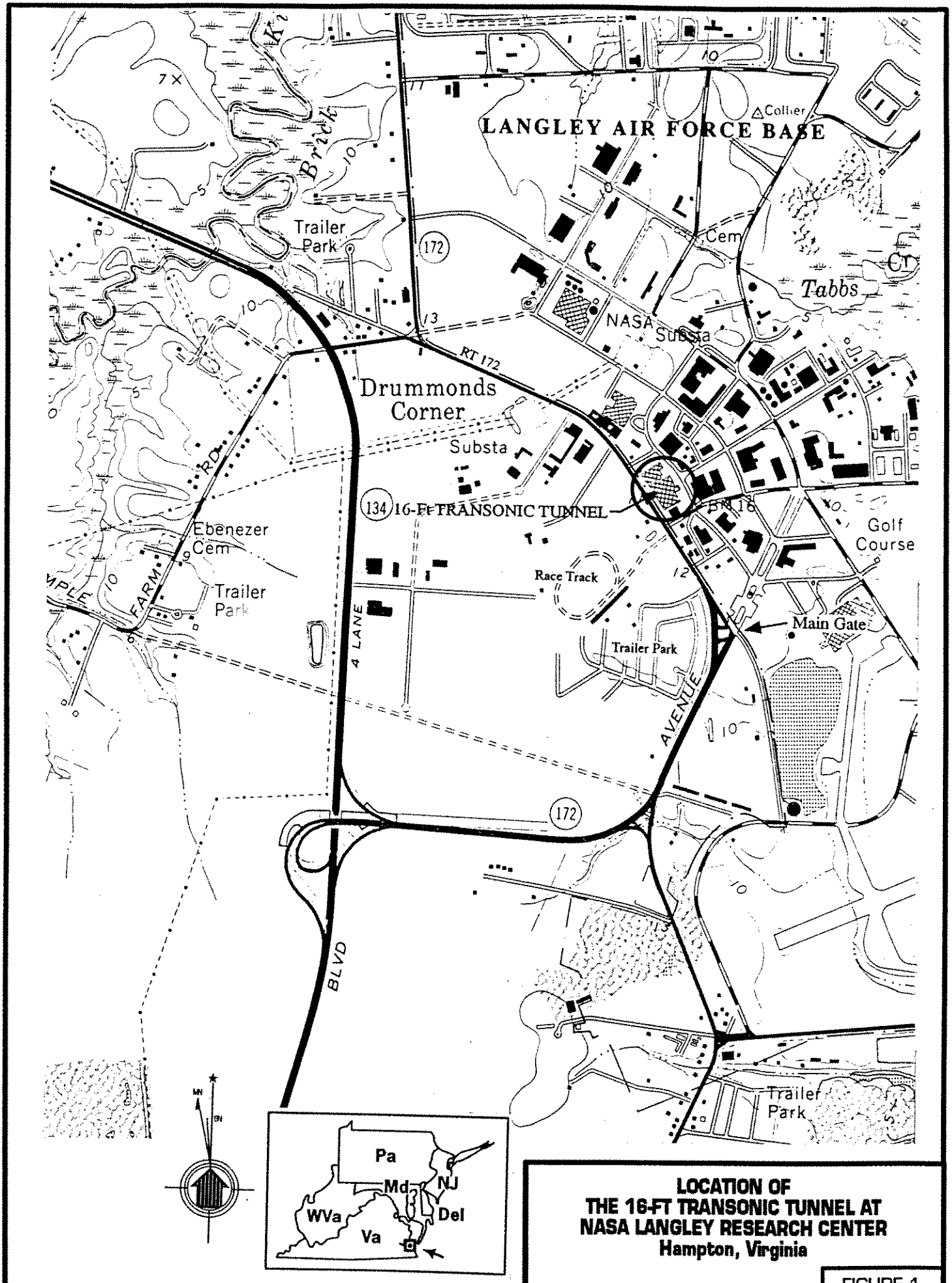
The existing 16-Ft TT (Building 1146) is located along the western perimeter of the NASA LaRC, along Virginia State Route 172 in the Hampton Roads area of southeastern Virginia (Figure 1). The 16-Ft TT is a closed-circuit, single-return, continuous-flow atmospheric tunnel having a slotted test section. The test medium is air at atmospheric conditions. The normal test range is from Mach number 0.2 to 1.3. Speeds up to Mach 1.05 are obtained with the tunnel main drive fans; speeds above Mach 1.05 are obtained with a combination of the main drive fans and test-section plenum suction created by a compressor.

The 16-Ft TT is used for studies of aerodynamic characteristics, flow simulation, and flow analysis of aircraft configurations at transonic speeds. The aerodynamic characteristics are obtained on both powered (propulsive) and unpowered models with flow simulation (engine/nacelle) including inlet (flow through) and exhaust (hot or cold flow) studies.

The tunnel is a steel structure situated above ground on piles (Figure 2). The length of the tunnel circuit along the center line is 283.5 meter (930 feet). The maximum inside diameter of the large end of the tunnel is 17.7 meters (58 feet), and the test section is a regular octagonal cylinder having a cross-sectional area slightly less than that of a 4.9-meter (16-foot) diameter circle. The test section air removal equipment is located outside the tunnel between the diffuser and the return passage. The wind tunnel drive end is located at the northern end of the tunnel. The two main drive electric motors, housed outside the tunnel, are each connected to one of the drive fans through a shaft about 18.3 meters (60 feet) long. The drive fans constitute a two-stage axial-flow compressor having two sets of counter-rotating blades with no stator blades. The air exchange tower, located at the southern end of the tunnel, provides for cooling of the wind tunnel air stream and scavenging of exhaust gases from any engines operated in the test section during research investigations.

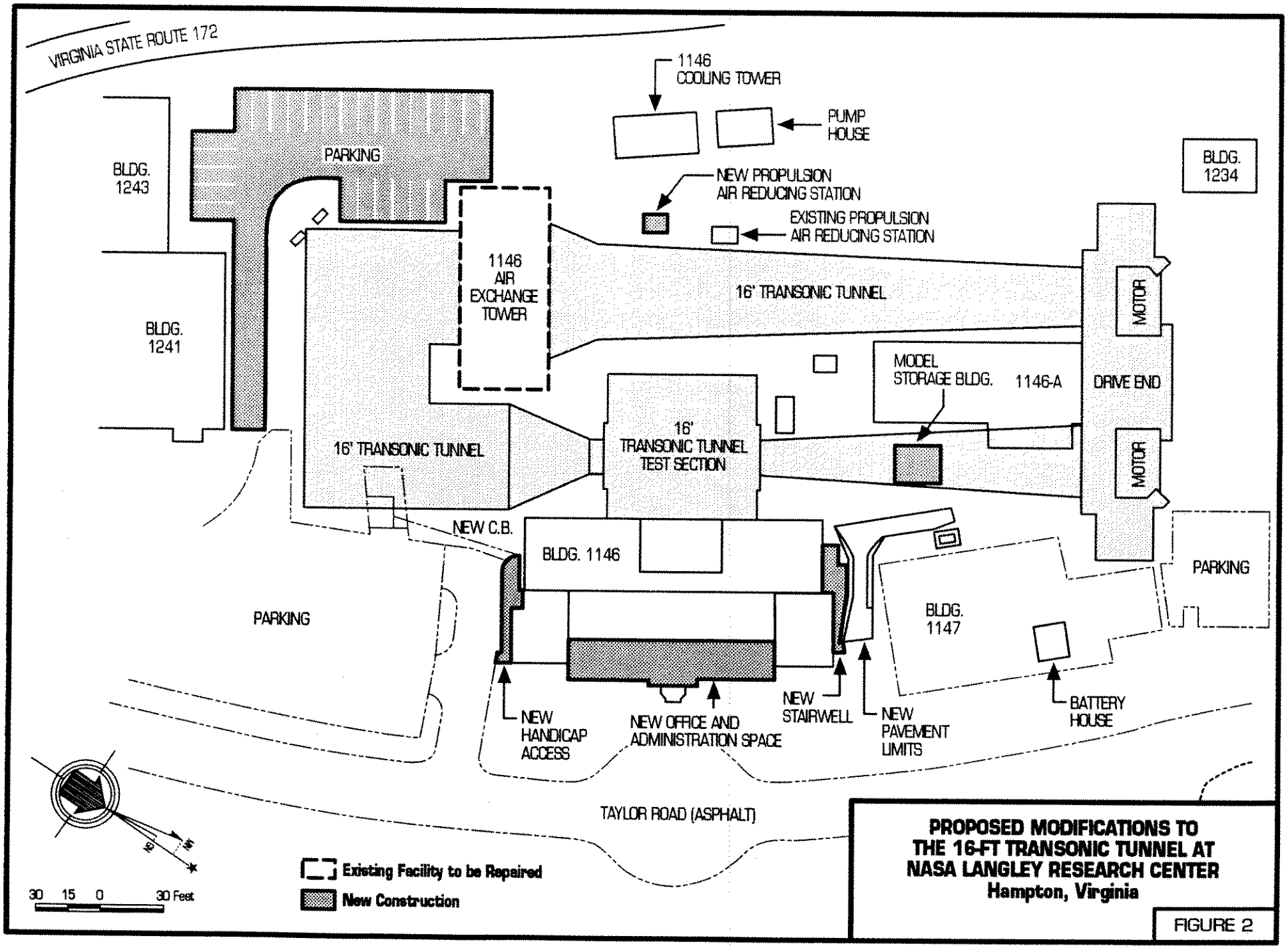
The office and administrative space is located in a brick structure along the eastern side of the wind tunnel (Building 1146). This structure is mostly two-story, with a small single-story section in the center. The original structure constructed in 1940 was a single-story structure; the two-story wings were constructed during the major facility rehabilitation in 1950.

The 16-Ft TT is operational either daytime or nighttime, whenever sufficient electrical power is available. The tunnel facility requires about 80 megawatts to come up to top speed. On average, there are 1 to 2 test runs per shift, and each run lasts about 2 hours. The 16-Ft TT operates approximately 500 hours per year.



LOCATION OF THE 16-FT TRANSONIC TUNNEL AT NASA LANGLEY RESEARCH CENTER
Hampton, Virginia

FIGURE 1



PROPOSED MODIFICATIONS TO THE 16-FT TRANSONIC TUNNEL AT NASA LANGLEY RESEARCH CENTER
Hampton, Virginia

FIGURE 2

3.2 PROPOSED ACTION

The proposed action consists of five parts:

1. Demolish the center one-story office and administrative space in Building 1146 (approximately 186 meters^2 (2,000 feet^2)) and construct a new two-story section. The new section will extend out 1.8 meters (6 feet) further than the existing building wings, and will provide approximately 558 meters^2 (6,000 ft^2) of new space. The new space will include an unclassified storage area, a classified storage area, an unclassified computer area, a classified computer area, and an engineering work area.

2. Construct a new storage building outside Building 1146. The proposed storage building will be a pre-fabricated metal structure constructed on a concrete slab. The proposed location is beneath the elevated tunnel structure, in an area that is presently grass-covered. To accommodate this location, LaRC will need to relocate an existing stormwater drain. The opening to the existing drain will be capped and a "T" will be installed to the side.

3. Construct a new, paved 25-space parking lot. The area of the new parking lot presently is gravel-covered and is being used as a laydown area for an exterior tunnel painting project. Once the exterior tunnel painting project is complete, the laydown materials will be removed from this area. No additional land clearing is necessary for construction of the parking lot.

4. Repair the existing air exchange tower. The repairs to the air exchange tower and mechanisms will consist of replacing the roof; replacing approximately 50 percent of the sheet metal outer skin and the asphalt/asbestos coated inner walls, as needed; repairing approximately 10 percent of the metal skin on the intake and exhaust vanes; refurbishing/replacing the cable mechanism on the exhaust vane actuator, and; performing general cleaning and painting.

5. Construct a new air reduction system. A second independent system is proposed for construction adjacent to the existing system, which will be retained. Addition of valves, filters, controls as well as piping are proposed to the existing piping distribution system at the 16-Ft TT. The new system will be constructed on a pad in an area that is presently gravel-covered. No additional land clearing is necessary.

All of the proposed construction will occur within an industrial area. The construction of the office space, parking lot, and outdoor metal storage building is scheduled to begin in April 1993 and will be complete in April 1994. The repairs to the air

exchange tower and the construction of the new air reduction system are scheduled for the summer seasons to coincide with the time when the tunnel is down for annual maintenance. These activities will occur between August and September 1993, and between July and September 1994.

The estimated construction cost for the proposed project is $3.5 million.

It is not anticipated that project construction will interrupt ongoing study activities at the 16-Ft TT. Completion of the proposed project is not anticipated to result in substantial changes to the operation of the 16-Ft TT.

3.3 NO-ACTION/OTHER ALTERNATIVES

Construction of new work space and parking space at an alternative location at LaRC was considered during project planning. This was determined not to be a viable alternative because of the high cost and operational limitations. There are no practicable new-construction alternatives to the proposed repairs to the air exchange tower, or to construction of the new air reduction system.

The only alternatives considered in this EA are the proposed activities described in the preceding section and the No-Action alternative. Inclusion of the No-Action alternative in an environmental analysis is prescribed by the Council on Environmental Quality Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500-1508). The No-Action alternative provides the benchmark against which the proposed action is evaluated. The No-Action alternative will maintain the status quo, and will entail continued use of the 16-Ft TT in its present condition.

The No-Action alternative will result in no impacts on the environment from either construction or operation; however, this alternative will not relieve the operational limitations presently occurring at the 16-Ft TT. Transfer of some study activities from the LaRC 16-Ft TT to an alternative facility would not be practical. The only alternative facility is the USAF's 16-Ft TT at Arnold Engineering Development Center (AEDC) in Tennessee; however, because the LaRC 16-Ft TT generally has a five-year backlog of research requirements, it is not feasible that this level of effort could be absorbed by the AEDC facility. Additionally, under the No-Action alternative, the needed repair to the air exchange tower will not be made, which will compromise the continued operation of the LaRC 16-Ft TT. It is imperative to the nation's aeronautical research capability that the LaRC 16-Ft TT be maintained in an operational and productive state.

4.0 ENVIRONMENTAL IMPACTS

4.1 PROPOSED ACTION

4.1.1 Water Quality

There will be no construction impact on water quality at LaRC. The construction contractor will be required to implement a sediment and erosion control plan for the project which will ensure no impact to surface water systems. The sediment and erosion control plan will be approved by the Contracting Officer prior to construction.

Domestic wastewater from the 16-Ft TT is discharged to the Hampton Roads Sanitation District (HRSD) under permit for treatment and disposal. The proposed action will not result in a change in the quantity or quality of this discharge since there will be no change in tunnel operation or in the number of employees at the 16-Ft TT. The tunnel facility does not generate any process wastewater.

There will be a minor increase in the amount of impervious surface due to the construction of the paved parking lot. The additional runoff will be incorporated into the existing stormwater management system at LaRC.

4.1.2 Air Quality

Construction of the proposed action will result in minor and temporary fugitive dust emissions during building demolition and earthwork operations. The use of standard construction dust control practices, such as spraying disturbed areas with water, will minimize any dust emissions. Emissions from construction vehicles and equipment will be minimal, provided that the vehicle engines and equipment are properly tuned and maintained.

The compressor and drive motors of the 16-Ft TT are electric-powered and do not generate air emissions. During operation, the tunnel facility exhausts air from the tunnel circuit at the rate of 5,600 meters^3/hour (200,000 feet^3/hour). This exhaust is primarily atmospheric air, but may include engine exhaust gases when engines are operated in the tunnel during investigations. The amount of exhaust gases produced by the engines is negligible. The 16-Ft TT is exempt from requiring a Clean Air Act permit for operation, and the Virginia Department of Air Pollution Control has not expressed concern over the emissions from the 16-Ft TT. The proposed action will not result in any changes in the air emissions from this facility.

4.1.3 Biological Resources

The biological resources of LaRC are described in the facility Environmental Resources Document (NASA, 1979; under revision at the

time of this writing). The 16-Ft TT is located within the densely developed western area of LaRC. There are no natural habitats in the vicinity of the tunnel facility. Construction of the proposed new office and work space will require minor clearing of lawn area (approximately 2,325 meters^2 (25,000 feet^2)) adjacent to the existing office building. Construction of the proposed new parking lot will occur in an area that presently is gravel-covered. The proposed action will have no effect on biological resources at LaRC.

4.1.4 Endangered and Threatened Species

No Federal or state-listed endangered or threatened species are known to occur at LaRC (Letter from Virginia Department of Conservation and Recreation's Division of Natural Heritage dated 21 January 1993). However, no comprehensive field survey has been performed at LaRC. The proposed action will occur in an industrial area of the Center devoid of suitable natural habitat. The consequences of the proposed action will not affect any endangered or threatened species, or their critical habitat.

4.1.5 Waste Generation, Treatment, Storage, and Disposal

Non-hazardous solid waste generated at LaRC is disposed of by burning in the on-site refuse-to-steam plant, or by disposal in an off-site permitted landfill. Construction debris from the proposed action will be disposed in an off-site permitted landfill. The proposed action will not affect the quantity or disposal of solid waste generated due to operation of the 16-Ft TT. LaRC will require the construction contractor to identify any hazardous wastes which will be generated during construction of the proposed project, and to submit a hazardous waste disposal plan to the Contracting Officer for approval prior to the planned disposal.

The 16-Ft TT does not generate any hazardous wastes and the proposed action will not result in the generation of any hazardous waste during operation of the tunnel facility.

4.1.6 Noise

Construction of the proposed action will produce minor increases in noise levels in the immediate vicinity. The most intensive of the proposed construction activities are the demolition and reconstruction of the office and administrative area on the eastern part of the facility. These activities will require some diesel-powered equipment, such as front-end loaders, dump trucks, concrete ready-mix trucks, and mobile cranes. The equipment will operate intermittently during daytime hours and produce noise levels in the range of 95 dBA locally. The noise will attenuate rapidly with distance and will likely be indistinguishable from background area noise at a distance of about 183 meters (200 yards). Noise-sensitive receptors within this distance include other LaRC

facilities and the building parking lot. As part of the Center Noise Control and Hearing Conservation Program, LaRC monitors noise levels within its property and facilities and takes appropriate actions such as providing hearing protection or evacuation when necessary of personnel from high noise areas in compliance with the Federal Noise Control Act (40 CFR 201-211). The nearest sensitive receptor outside LaRC property is the trailer park located about 610 meters (2,000 feet) to the southwest. No noise-sensitive receptors will be impacted by construction noise. Other construction activities will produce lower noise levels and will not have any adverse impacts.

The operational routine and schedule of the 16-Ft TT will not change as a result of the proposed action. The modifications will not alter the noise producing characteristics of the tunnel and hence no change in the operational noise levels is expected. The closed-circuit design of the 16-Ft TT contains most of the noise produced within the building. However, during full-load operation of the tunnel at Mach 1.3, the exhaust air from the electrically driven, 9-stage compressor is vented to the atmosphere through a vertical stack. This raises exterior noise levels in the nearby trailer park to about 70 dBA during short test runs (NASA, 1980). The location of the trailer park adjacent to a race track and along the flight path to the Langley Air Force Base (Langley AFB, 1990), places it within the Noise Contour District of the City of Hampton. The City requires that new developments in the area be built with additional acoustic insulation and that prospective property buyers be made aware of the potential high noise levels. The 16-Ft TT operating noise levels is compatible with the City's area noise designation.

4.1.7 Toxic Substances

Construction of the proposed action will require the removal and disposal of the following materials as part of the demolition of the existing administrative space, and removal of the deteriorated components of the existing air exchange tower:

765 meter^2 (8,230 feet^2) of vinyl asbestos tiles

280 linear meters (918 linear feet) of asbestos pipe insulation

279 meter^2 (3,000 feet^2) (the top 2") of asbestos-contaminated soil

4,892 meter^2 (52,610 feet^2) of asbestos-covered metal siding

443 meter^2 (4,770 feet^2) of asbestos-coated louvers

3,348 meter^2 (36,000 feet^2) of lead paint

The asbestos waste will be managed in accordance with applicable Federal, state, and local regulations (including 40 CFR 763 Subpart M, National Emissions Standard for Asbestos; 29 CFR PART 1926.58 Asbestos; and Part 54-145 of the Code of Virginia), the Langley "Facility Safety Requirements" (LHB 1740.2) and the "Langley Safety Requirements" for contractors, Section 01060 (SPECSINTACT).

The asbestos removal for this project will be performed by the construction contractor in accordance with the LaRC SPECSINTACT, which requires the contractor to perform all necessary agency notifications, and to submit an asbestos operational plan to the Contracting Officer for approval. The contractor will be responsible for transporting properly packaged asbestos waste to a specified staging area at LaRC. From there, the asbestos waste will be disposed off site in an asbestos-licensed landfill.

Other toxic substances, such as lead paint, encountered during project construction will be managed in accordance with appropriate Federal, state, and local regulations, and with the LaRC SPECSINTACT. The contractor will be required to submit a lead paint plan specific to this project.

4.1.8 Historic, Archeological, and Cultural Factors

In accordance with the "Programmatic Agreement Among the National Aeronautics and Space Administration, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation" (signed 20 September 1989), the proposed action is classified a Category B activity. Category B activities are limited to actions that do not alter the characteristics of this facility that support its historical significance: (1) replacement of historic hardware and components, (2) modification of the original structure and equipment, and (3) new construction compatible with the existing structure, purpose, and operation of the facility. The Programmatic Agreement does not require consultation with the State Historic Preservation Officer (SHPO) for Category B activities, but requires NASA to include a description of the project and the mitigation measures in the annual summary of its activities. LaRC will generate the appropriate mitigation measures, which include recordation, offering artifacts to museums and the SHPO, and preserving the NACA stone nomenclature from the original structure and incorporating it into the new structure. LaRC will describe the project activities and mitigation in the established annual reporting process.

4.1.9 Economic, Population, and Employment Factors

The current workforce at the 16-Ft TT is about 45 persons, with additional support on an as-needed basis. The proposed action will not change the workforce at the 16-Ft TT.

The proposed modifications have an estimated construction cost of $3.5 million. It is anticipated that much of this expenditure will be made within the Hampton Roads region.

4.1.10 Radioactive Materials and Non-ionizing Radiation

No radioactive materials or non-ionizing radiation will be used or released in the construction or operation of the proposed action.

4.1.11 Wetlands and Floodplains

There are no wetlands or floodplains in the vicinity of the 16-Ft TT. No wetlands or floodplains will be affected by the proposed action.

4.1.12 Coastal Resources Management

LaRC is located within Tidewater Virginia, but is excluded by law from the Virginia coastal management area. The proposed modifications to the 16-Ft TT will not affect Virginia's coastal zone, and will be consistent with the Virginia Coastal Resources Management Program.

4.1.13 Energy

The 16-Ft TT is a major electricity user at LaRC, and is covered by the facility-wide energy management program for energy conservation and efficient usage. The proposed modifications to the facility will not have a significant effect on the electricity usage of the tunnel. There will be a minor increase in electricity usage in the new office space.

4.2 NO-ACTION ALTERNATIVE

The No-Action alternative will result in no impacts to the environment from either construction or operation; however, this alternative will not relieve the current and projected strain on the engineering and administrative facilities at the 16-Ft TT; will not relieve the limitations imposed by the shared air reduction system; and will not prevent limitations on future facility operation imposed by a deteriorating tunnel air cooling system.

5.0 REFERENCES

NASA. March, 1990. Construction of Facilities FY 1992 Discrete Program. Facility Requirements and Advocacy Document for Modifications to 16-Foot Transonic Tunnel (1146). Langley Research Center; Hampton, Virginia.

NASA. 1979. Environmental Resources Document, Langley Research Center; Hampton, Virginia.

NASA. 1980. Internal Memo, Noise Report No.80-78, Langley Research Center; Hampton, Virginia.

Langley AFB. 1990. Air Installation Compatible Use Zone Report, Volume I, Hampton, Virginia.

6.0 AGENCIES RECEIVING A COPY OF THE ENVIRONMENTAL ASSESSMENT

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ENDANGERED SPECIES REVIEW

ADMINISTRATION
NATURAL HERITAGE
PLANNING AND RECREATION RESOURCES
SOIL AND WATER CONSERVATION
STATE PARKS

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

DIVISION OF NATURAL HERITAGE

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21 January 1993

Dottie Keough
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Arlington, Virginia 22201

Re: Resources Management Document for NASA Langley Research Center

Dear Ms. Keough:

In response to your request for information, the Department of Conservation and Recreation's Division of Natural Heritage (DNH) has searched its Biological and Conservation Datasystem (BCD) for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources (NHR's) are defined by the Virginia Natural Area Preserves Act as "the habitat of rare, threatened, or endangered plant and animal species, rare or state significant natural communities or geologic sites, and similar features of scientific interest" (sec. 10.1-209 et seq. of the Code of Virginia).

According to the information currently in our files, there are no natural heritage resources documented at the Langley Air Force Base and Langley Research Center. The absence of data does not necessarily mean that natural heritage resources do not exist on or adjacent to the study site, but rather that our files do not currently contain information to document their presence.

To most accurately identify those species with a good potential to occur at the Langley Research Center, I have enclosed lists of natural heritage resources that have been documented on the Poquoson West, Newport News North, and Hampton USGS Quadrangles. All of these resources could occur at Langley in appropriate habitat, however, their presence can only be verified though field surveys. There are no NHR's documented on the Poquoson East Quadrangle.

Due to the delay in responding to your request, I am providing this information to you at no charge. Please note that DNH has recently revised the Information Services provided through

environmental review. An updated fact sheet and order form are included for your reference.

DNH's Biological and Conservation Datasystem is constantly growing and revised. Please contact DNH for an update on this natural heritage information if a significant amount of time passes before it is utilized.

An explanation of species rarity ranks and legal status abbreviations is enclosed for your reference. Thank you for the opportunity to comment on this project.

Sincerely,

Timothy John O'Connell

Timothy J. O'Connell
Environmental Review Coordinator

DEPARTMENT OF CONSERVATION & RECREATION
DIVISION OF NATURAL HERITAGE

NATURAL HERITAGE RESOURCES OF POQUOSON WEST QUAD

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
** AMPHIBIANS					
AMBYSTOMA MABEEI	MABEE'S SALAMANDER	G4	S1		LT
AMBYSTOMA TIGRINUM	TIGER SALAMANDER	G5	S1		LE
HYLA GRATIOSA	BARKING TREEFROG	G5	S1		LT
** BIRDS					
ARDEA HERODIAS	GREAT BLUE HERON	G5	S3		
IXOBRYCHUS EXILIS	LEAST BITTERN	G5	S2		
** COMMUNITIES					
COASTAL PLAIN SINKHOLE POND			S1		
ESTUARINE HERBACEOUS VEGETATION					
ESTUARINE SCRUB					
LOW HERBACEOUS WETLAND					
OLIGOTROPHIC SEASONALLY FLOODED WOODLAND					
OLIGOTROPHIC SEMIPERMANENTLY FLOODED WOODLAND					
SUBMESOTROPHIC FOREST					
** MAMMALS					
CONDYLURA CRISTATA PARVA	STAR-NOSED MOLE	G5T4	S2	3C	
** NON-VASCULAR PLANTS					
SPHAGNUM MACROPHYLLUM VAR MACROPHYLLUM	LARGE-LEAF PEATMOSS	G3G4T3	S2		
** VASCULAR PLANTS					
BOLTONIA CAROLINIANA	CAROLINA BOLTONIA	G2Q	S2		
CAREX COLLINSII	COLLINS' SEDGE	G4	S3		
CUSCUTA INDECORA	PRETTY DODDER	G5	S2?		
ELEOCHARIS TENUIS VAR VERRUCOSA	SLENDER SPIKERUSH	G5T3T5	S1		
FIMBRISTYLIS PERPUSILLA	HARPER'S FIMBRISTYLIS	G2	S1	C2	LE
LYTHRUM ALATUM VAR ALATUM	WINGED LOOSESTRIFE	G5T5	S2		
SABATIA CAMPANULATA	SLENDER MARSH PINK	G5	S2		
TILLANDSIA USNEOIDES	SPANISH MOSS	G5	S2		

22 Records Processed

DEPARTMENT OF CONSERVATION & RECREATION
DIVISION OF NATURAL HERITAGE

NATURAL HERITAGE RESOURCES OF NEWPORT NEWS NORTH QUAD

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
** AMPHIBIANS					
AMBYSTOMA MABEEI	MABEE'S SALAMANDER	G4	S1		LT
** VASCULAR PLANTS					
CAREX LUPULIFORMIS	FALSE HOP SEDGE	G3G4Q	S1		
CYPERUS DIANDRUS	UMBRELLA FLATSEDGE	G5	SH		
QUERCUS SHUMARDII	SHUMARD'S OAK	G5	S2		
TRILLIUM PUSILLUM VAR VIRGINIANUM	VIRGINIA LEAST TRILLIUM	G3T2	S2	C2	

5 Records Processed

DEPARTMENT OF CONSERVATION & RECREATION
DIVISION OF NATURAL HERITAGE

NATURAL HERITAGE RESOURCES OF HAMPTON QUAD

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
** BIRDS					
CASMERODIUS ALBUS	GREAT EGRET	G5	SB2SN4		
CHARADRIUS MELODUS	PIPING PLOVER	G3	S2	LT	LT
RYNCHOPS NIGER	BLACK SKIMMER	G5	S2		
STERNA ANTILLARUM	LEAST TERN	G4	S2		
STERNA HIRUNDO	COMMON TERN	G5	S3		
** INVERTEBRATES					
CICINDELA DORSALIS DORSALIS	NORTHEASTERN BEACH TIGER BEETLE	G4T2	S2	LT	C
** OTHER					
CHAMPION TREE					
** VASCULAR PLANTS					
CAREX PEDUNCULATA	LONGSTALK SEDGE	G5	S2		
CUSCUTA INDECORA	PRETTY DODDER	G5	S2?		
DESMODIUM STRICTUM	PINELAND TICK-TREFOIL	G3G4	S2		
DESMODIUM TENUIFOLIUM	SLIM-LEAF TICK-TREFOIL	G3G4	S2		
DROSERA BREVIFOLIA	DWARF SUNDEW	G5	S2		
IVA IMBRICATA	SEA-COAST MARSH-ELDER	G5?	S1S2		

13 Records Processed

Definition of Abbreviations Used on Natural Heritage Resource Lists
of the
Virginia Department of Conservation and Recreation

Natural Heritage Ranks

The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHR's," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The primary criterion for ranking NHR's is the number of populations or occurrences, i.e. the number of known distinct localities. Also of great importance is the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals. Other considerations may include the quality of the occurrences, the number of protected occurrences, and threats. However, the emphasis remains on the number of populations or occurrences such that ranks will be an index of known biological rarity.

S1 Extremely rare; usually 5 or fewer populations or occurrences in the state; or may be a few remaining individuals; often especially vulnerable to extirpation.

S2 Very rare; usually between 5 and 20 populations or occurrences; or with many individuals in fewer occurrences; often susceptible to becoming extirpated.

S3 Rare to uncommon; usually between 20 and 100 populations or occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.

S4 Common; usually >100 populations or occurrences, but may be fewer with many large populations; may be restricted to only a portion of the state; usually not susceptible to immediate threats.

S5 Very common; demonstrably secure under present conditions.

SA Accidental in the state.

SB# Breeding status of an organism within the state.

SH Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.

SN# Non-breeding status within the state. Usually applied to winter resident species.

SR Reported without persuasive documentation

SU Status uncertain, often because of low search effort or cryptic nature of the element.

SX Apparently extirpated from the state.

SZ Long distance migrant whose occurrences during migration are too irregular, transitory and/or dispersed to be reliably identified, mapped and protected.

Global ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note that GA and GN are not used and GX means apparently extinct. A "Q" in a rank indicates that a taxonomic question concerning that species exists. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity.

These ranks should not be interpreted as legal designations.

Federal Legal Status

The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

LE - Listed Endangered
LT - Listed Threatened
PE - Proposed Endangered
PT - Proposed Threatened
C1 - Candidate, category 1
C2 - Candidate, category 2
3A - Former candidate - presumed extinct
3B - Former candidate - not a valid species under current taxonomic understanding
3C - Former candidate - common or well protected
NF - no federal legal status

State Legal Status

The Division of Natural Heritage uses similar abbreviations for State endangerment.

LE - Listed Endangered
LT - Listed Threatened
C - Candidate
PE - Proposed Endangered
PT - Proposed Threatened
NS - no state legal status

For information on the laws pertaining to threatened or endangered species, contact:

U.S. Fish and Wildlife Service for all FEDERALLY listed species
Virginia Department of Agriculture and Consumer Services Plant Protection Bureau for STATE listed plants and insects;
Virginia Department of Game and Inland Fisheries for all other STATE listed animals.

5/92

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NOTICE 93-LaRC-1

National Environmental Policy Act; Finding of No Significant Impact; Modifications to the 16-Foot Transonic Tunnel at Langley Research Center

AGENCY: National Aeronautics and Space Administration (NASA)

ACTION: Finding of No Significant Impact

SUMMARY: Pursuant to the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and NASA's Procedures for Implementing NEPA (14 CFR Subpart 1216.3), NASA has made a Finding of No Significant Impact (FONSI) with respect to the planned modifications to the 16-Foot Transonic Tunnel at the Langley Research Center, located in the City of Hampton, Virginia. The existing 16-Foot Transonic Tunnel is used to study airframe propulsion interaction effects under transonic conditions.

DATE: Comments in response to this notice must be received in writing within 30 days of (first date of publication in local newspaper).

ADDRESS: Comments should be addressed to Tricia Romanowski, Environmental Engineer, NASA/Langley Research Center, Mail Stop 429, Hampton, Virginia 23681; Telephone (804) 864-7020.

The Environmental Assessment (EA) prepared for the Modifications to the 16-Foot Transonic Tunnel which supports this FONSI may be reviewed at:

Hampton Public Library, Main Branch, Reference Department, 4207 Victoria Boulevard, Hampton, Virginia

NASA Headquarters Information Center, Room 1H23, 300 E Street S.W., Washington, DC

A limited number of copies of the EA are available by contacting Tricia Romanowski, Environmental Engineer, at the address or telephone number indicated.

FOR FURTHER INFORMATION CONTACT:

Tricia Romanowski, Environmental Engineer, NASA/Langley Research Center, Mail Stop 429, Hampton, Virginia 23681; Telephone (804) 864-7020.

SUPPLEMENTARY INFORMATION: NASA has reviewed the EA prepared for the proposed modifications to the 16-Foot Transonic Tunnel and has determined that it represents an accurate and adequate analysis of the scope and level of associated environmental impacts. The EA is incorporated by reference in this FONSI.

NASA is proposing to construct modifications to the existing 16-Foot Transonic Tunnel at the Langley Research Center, which is located in the City of Hampton, Virginia. The 16-Foot Transonic Tunnel is the only large transonic wind tunnel facility within NASA dedicated to the study of airframe propulsion interaction effects. Present and projected future use of this facility indicate the need for (1) an expansion of work space and supporting facilities; (2) an expansion of the facility's air reduction system, and; (3) the repair of deteriorated components of the facility's air exchange system.

A shortage of work space, computing areas, and model storage areas exists at the 16-Foot Transonic Tunnel. The proposed modifications entail demolition of an existing single-story part of the administrative building and construction of a two-story replacement structure in the same location. A new prefabricated metal storage building and parking lot for 25 spaces will be constructed.

The existing air reduction system, which reduces the pressure of the air supplied to the tunnel, services both the 16-Foot Transonic Tunnel and the adjacent National Transonic Facility. The proposed modifications entail construction of a second independent air reduction system, which will be connected to both the 16-Foot Transonic Tunnel and the National Transonic Facility. This second system will serve as a back-up system for both tunnel facilities.

The existing air exchange tower, which is part of the system for cooling the tunnel air, has been operational for over 50 years without rehabilitation, and some of the components have deteriorated. The proposed modifications entail removing and replacing the deteriorated components.

The only alternative to the proposed modifications considered is the No-Action Alternative (i.e., no construction of the expanded work and storage space, parking lot, or air reduction system, and no repairs to the air exchange tower). Cancellation of the proposed modifications will not relieve the strain on the work and storage space and parking facilities; relieve the limitations imposed by the shared air reduction system; or prevent limitations on future facility operation imposed by a deteriorating air cooling system. Construction of new work space and parking space at an alternative location is not a viable alternative because of the cost and operational limitations. There are no practicable new-construction alternatives to the proposed repairs to the air exchange system or the new air reduction system.

The environmental impacts identified as a result of the environmental assessment are as follows. Construction will be performed under a sediment and erosion control plan which has been approved by the Contracting Officer prior to construction. No change will occur in the quantity or quality of domestic wastewater from the facility, which will continue to be discharged to the Hampton Roads Sanitation District under permit. There will be minor and temporary fugitive dust emissions and noise during construction. Fugitive emissions will be controlled by standard dust controls. Emissions from construction equipment and vehicles will be controlled by keeping the equipment and vehicles properly tuned. Construction noise will attenuate rapidly with distance from the facility, and will be indistinguishable from background noise at a distance of approximately 180 meters (200 yards). There will be no change in the dust emissions or noise from operation of the 16-Foot Transonic Tunnel. Any hazardous wastes generated during construction will be disposed in accordance with a hazardous waste disposal plan which has been approved by the Contracting Officer prior to construction. Asbestos waste resulting from demolition will be managed under an approved asbestos operational plan in accordance with applicable Federal, state, and local regulations. Lead paint resulting from the demolition will be managed under an approved lead paint plan.

The 16-Foot Transonic Tunnel is located in a densely developed area of the Langley Research Center, and is not located in any wetlands or floodplains. No threatened or endangered species or critical habitats will be affected by the project. The proposed action is classified as a "Category B activity" under the Programmatic Agreement Among the National Aeronautics and Space Administration, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation (signed 20 September 1989). In accordance with this Programmatic Agreement, NASA will generate the appropriate mitigation measures and will describe the project activities and mitigation in the established annual reporting process. The proposed action will not affect Virginia's coastal zone, and will be consistent with the Commonwealth of Virginia's Coastal Resources Management Program. No other matters of potential environmental concern have been identified. Under the planned construction of the modifications, and operation of the 16-Foot Transonic Tunnel, no significant effects to the environment are anticipated.

On the basis of the 16-Foot Transonic Tunnel EA and underlying reference documents, NASA has determined that the environmental impacts associated with this project will not individually or cumulatively have a significant effect on the quality of the environment. Therefore, an Environmental Impact Statement (EIS) is not required. NASA will take no final action or authorize construction activities prior to the expiration of the 30-day comment period.

H. Lee Beach
Acting Director
NASA/Langley Research Center

3/31/93
Date

Concurrence:

Billie J. McGarvey
Director, Facilities Engineering Division
NASA Headquarters

26 March 1993
Date